Response to FCC 17-60, Restoring Internet Freedom

As a professional who has worked for decades on data communications and telecommunications services and as a regular consumer of internet services, I would like to provide my comment on the Restoring Internet Freedom, Notice of Proposed Rulemaking.

Summary:

The proposed classification of Internet service providers (ISPs) as providing an "information service" (defined as offering the capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available via telecommunications) is based on antiquated thinking. In today's data communications world, ISPs provide connectivity to Internet information services - ISPs are not inherently information service providers.

The terminology used is somewhat outdated and confusing. So, it is far more important to understand the logic behind separating information service from telecommunications service from a regulatory perspective. Historically, telecommunications services provided the physical carrier to an individual household or place of business and access to shared, common carrier, networks. In today's Internet world, the ISPs fill this same role for data service.

Because of the physical carrier connection, ISPs have a near monopoly in many neighborhoods. For example, in my neighborhood (as in most areas of the country) there is only one cable provider, and thus no opportunity for me to switch to a different ISP if I value the advantages of such a physical connection (and most people do - cable has a significant bandwidth advantage).

Unlike the connectivity provided by an ISP, true information services are not endowed with such inherently monopolistic benefits. Once I have access to the Internet through my ISP, I am able to choose which content providers, email services, web browsers, etc. I prefer to use or access. The fact that my ISP may also offer some of these services does not make them a true information service because their primary business is to provide access through their cable and standard data communications equipment.

If the policies my broadband cable ISP forces on its customers are abhorrent to me and my neighbors, we have extremely limited alternatives available for high speed data access to the Internet. There truly are no equivalent alternatives for me to choose.

Because ISPs have an inherent monopoly based on the physical connection, they need to be regulated much more tightly than a true information service. With true information services, consumers are free to shop and choose a "best fit" for their personal privacy and information needs.

Arguments for treating ISPs as information services based on antiquated wording do not serve the public good. Discussions of protocols and DNS services obfuscate the underlying fact that my ISP is truly there to allow me to connect to Internet content and services that are typically wholly independent of my ISP. The fact that my ISP must continuously maintain and upgrade their services, seamlessly supporting IPv4 and IPV6, regularly updating security (including firewalls) is irrelevant to their position in my Internet communications hierarchy.

In the history of telecommunications, there have also been many technical advances that forced providers to maintain and update their networks and equipment. The ISP role is similarly challenged, but the difference in our new data communications world versus the historically analog voice world of telecommunications is that all services are based on data communications protocols, ideally transparent to users. Arguing that the use of particular

protocols puts a network access and communications provider in the class of an information service (end user data processing) is fundamentally wrong. Yes, the "telecommunications" terminology is not ideal, but the logical intent of separating the carrier (the network connectivity) from the end data processing mandates classifying an ISP akin to telecommunications from a regulatory standpoint.

Arguments based on the onerous impact of more regulatory oversight are also invalid. The goal should be to secure the network service required for the public. For example, regulations imposed on auto makers have often been framed (by the industry) as doing harm to the industry and to consumers. However, in the long run, the public has been well-served by the auto industry's regulatory restrictions.

The Internet is a place founded on equality. And the free market it has fostered has been a great positive for our country, for innovation, and for free speech. If ISPs are able to manipulate access, for profit, to benefit themselves and partners, the impact on consumers and the inequality created will have a more chilling effect on our country than any temporary regulatory uncertainty.

The following comments are organized using paragraph numbers from the Notice.

Paragraph 27: Claiming that ISPs are information services because they "offer the capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications" is roughly equivalent to claiming that the electric company is an information service. ISPs do not play an active role in processing the data, as originally intended by the wording above. They are simply transferring data from point A to point B as directed by their user/customer. They are not providing content via telecommunications (which is what the wording is intended to convey - however obliquely), instead they are a data communications service - providing data transportation via the latest suite of Internet protocols. Ideally, the FCC would begin thoughtful deliberations on how to manage ISPs properly, similarly to a telecommunications entity, but with some distinctions based on the unique nature of data communications in the modern world.

Although some ISPs do offer some information services, these are optional services from the perspective of their customers. Those aspects of their services could be regulated as information services as long as their primary role as an access point, providing data transportation via the latest suite of internet protocols, is regulated as the communications service (like a telecommunications service) that it actually is. This distinction, and its separate regulatory environment, is vital because of the physical service/connectivity aspect of the ISP role.

Paragraph 28: The assertion that "consumers are very likely to use their high-speed Internet connections to take advantage of competing services offered by third parties" is absolutely correct. Many consumers today use their ISP simply as the high speed service access point and rely entirely on independent services for email, web browsing, data storage services, etc. And the data services available through broadband service are typically also accessible through other access points, however, usually at much lower data rates.

To anyone knowledgeable about the Internet and how consumers use it in 2017, it is clear that broadband ISPs primarily exist to provide access to information services. There are significant pressures on broadband service providers, though. And a careful analysis of the regulatory needs for that industry is still required. However, treating ISPs akin to any other information service is erroneous because broadband ISPs are often operating as monopolies in many

areas, and should have no ability to influence or form profit partnerships with specific content providers. (Which is precisely why the Title II Order was established - and it should be retained and addressed in more detail by the FCC.)

Paragraph 29: This paragraph totally misses the point of modern data communications. In its infancy, the form of data communications aligned well with the antiquated terminology discussed repeatedly in FCC 17-60, Restoring Internet Freedom. However, data communications have evolved such that the intended separation between the "carrier" (i.e., telecommunications service in the antiquated terminology) and the information service (as defined by the antiquated terms used repeatedly in FCC 17-60) has shifted to include the ISP as part of the service carrier rather than the information service itself. There was a time when data communications were simply addressed, point-to-point, over telecommunications services. But data is now addressed logically (via names) and only the most rudimentary communications protocol layers are involved in the final point-to-point delivery. In fact, even that point-to-point delivery is no longer a simple one-to-one and often involves very complex and dynamic routing that can change multiple times within the same data communications stream or information package.

Paragraph 30: To assert that ISPs are involved in transforming the user's data is to make a leap that any data communications expert would find laughable. The ISPs are only involved in addressing and routing and are not directly involved in the user's end data. Even when an ISP is involved in advanced address spoofing schemes or even in some form of security encapsulation that may require binary manipulation of the data stream, the ISP should still not be classified as involved in the user's data. The user's data is between the end user and his intended end communicator (i.e., content provider).

Many sophisticated routers within the Internet that are completely independent of end users and specific ISPs provide these same address manipulation and sometimes even binary manipulation for security or reliability purposes. So, giving a user's end ISPs a higher status than network equipment that has NO commercial Internet service provider role makes absolutely no sense. Today's data network communications devices are more sophisticated and complex versions of the telecommunications service equipment called out in the antiquated terminology FCC 17-60 disputes.

The discussion of firewalls, although a slightly different level of data service, is likewise not a unique ISP feature. The Internet is inherently complex and every network point must provide security protections for it's own world and for any partners and customers it affects.

As noted previously, data communications, and Internet service/access, has some added complexity that did not exist when regulations for telecommunications services were envisioned. However, that complexity does not transform the primary responsibility of an ISP from a data access/transmission role into an information service - in the originally intended, classical sense. Rather than abandoning work on advancing regulations to adequately address the new, more complex world of ISPs as data access points, the FCC should work on devising regulations similar to those for telecommunications services which will protect consumers and the independence of Internet access.

Paragraph 31: This paragraph misses two key points and the conclusion reached is wrong.

Taken in the historical perspective of Internet access service at the time it was written, an access service was a true software end-user application that provided its own data content

and user services, as well as Internet access. So, this wording actually applies to a hybrid data service that is no longer the norm.

And, even more importantly, the access service called out in the Act was one that a user could freely swap or choose because the service was not tied to a limited physical connection. At home, I could dial-in to any access service I wanted. And access services could compete freely because there was no physical connection required.

Broadband service does NOT fit this intent of this antiquated terminology. Broadband service has a more onerous monopolistic concern that would not be adequately addressed if it is inappropriately relieved of more rigorous FCC regulation.

Paragraph 32: See paragraph 31. The same mis-interpretation of antiquated terminology is occurring in the logic here; and the same concerns about broadband's monopolistic nature apply.

Paragraph 33: Broadband Internet access service is closer to telecommunications service in the antiquated terminology framework from which you must work. However, as I have stated multiple times, some additional effort should be put into understanding the subtle differences, and managing regulatory efforts for broadband service.

Paragraph 34: The vibrant and competitive free market of the Internet is best served by treating Broadband Internet access service like a telecommunications service. Senator McCain's comments are not based on decades of expertise working in the industry, nor extensive application of the Internet's free market space. If you speak with those who are in the dynamic, entrepreneurial world of Internet content and true information services, you will learn that they prefer a baseline for broadband access that places it under controls that prevent abuses (such as AT&T's rejection of FaceTime content).

Paragraph 36: With respect to the "marketing and pricing strategies, which emphasize speed and reliability of transmission separately from and over the extra features of the service packages they offer", the point is that users are buying access. Discussions here and in Paragraph 37 regarding services such as DNS are ill-informed. DNS is a core aspect of all Internet function. Any attempt to isolate DNS as if it were a service beyond the basic access to the Internet is akin to saying features such as international calls and "911" emergency service, and the ability to wiretap (given legal authority) using a telecommunications service provider are not part of a telecommunications system. DNS is an integral part of the Internet protocol system just as those features are an integral part of a modern telecommunications system.

Paragraphs 38 thru 43: Choosing poorly informed/considered precedent to undo a wisely, and carefully considered improvement to the FCC's oversight responsibility is a weak excuse for doing what it is in the best interest of the country, the long term best interest of the free market of the Internet, and our democracy.

Paragraphs 44 thru 51: These are clearly designed to give companies in a position to financially benefit from the proposed change an opportunity to lobby for their personal interest. Inputs received here should be considered suspect as they are based purely on the highly corrupting influence of financial gain. The bigger concern should be how reversing this will

play out as actions such as AT&T's power play to crush FaceTime are likely to affect the Internet and the free exchange it currently fosters.

This is not the best way to resolve the concerns of Broadband Internet companies. The best solution is to regulate appropriately. And since Broadband providers hold a monopoly and are able to affect the free flow of information, they must be tightly regulated. Internet data services, and individual web sites, should be allowed to compete on an equal footing - and Broadband Internet companies have proven they are incapable of serving honestly and equally. If they are not tightly regulated, consumers and innovators will not experience the free market Internet that we currently have for much longer.

My background:

Began work as a data communications Software Engineer in 1989. Worked on pre-Internet data communications systems, including dial-up capability. Studied and integrated early TCP/IP protocol layers (at the source code level). Worked in telecommunications and data communications industry as a Software Engineer, and later as a Systems Engineer and System Architect. Designed data network architectures and was award several patents for data protocols over cellular networks. Worked extensively on IPv6, DHCP and DNS adaptations for cellular and satellite communications networks. Also designed and specified network architectures with streaming, multicast, and SIP protocols.

Long time user of Internet services for personal as well as professional purposes.